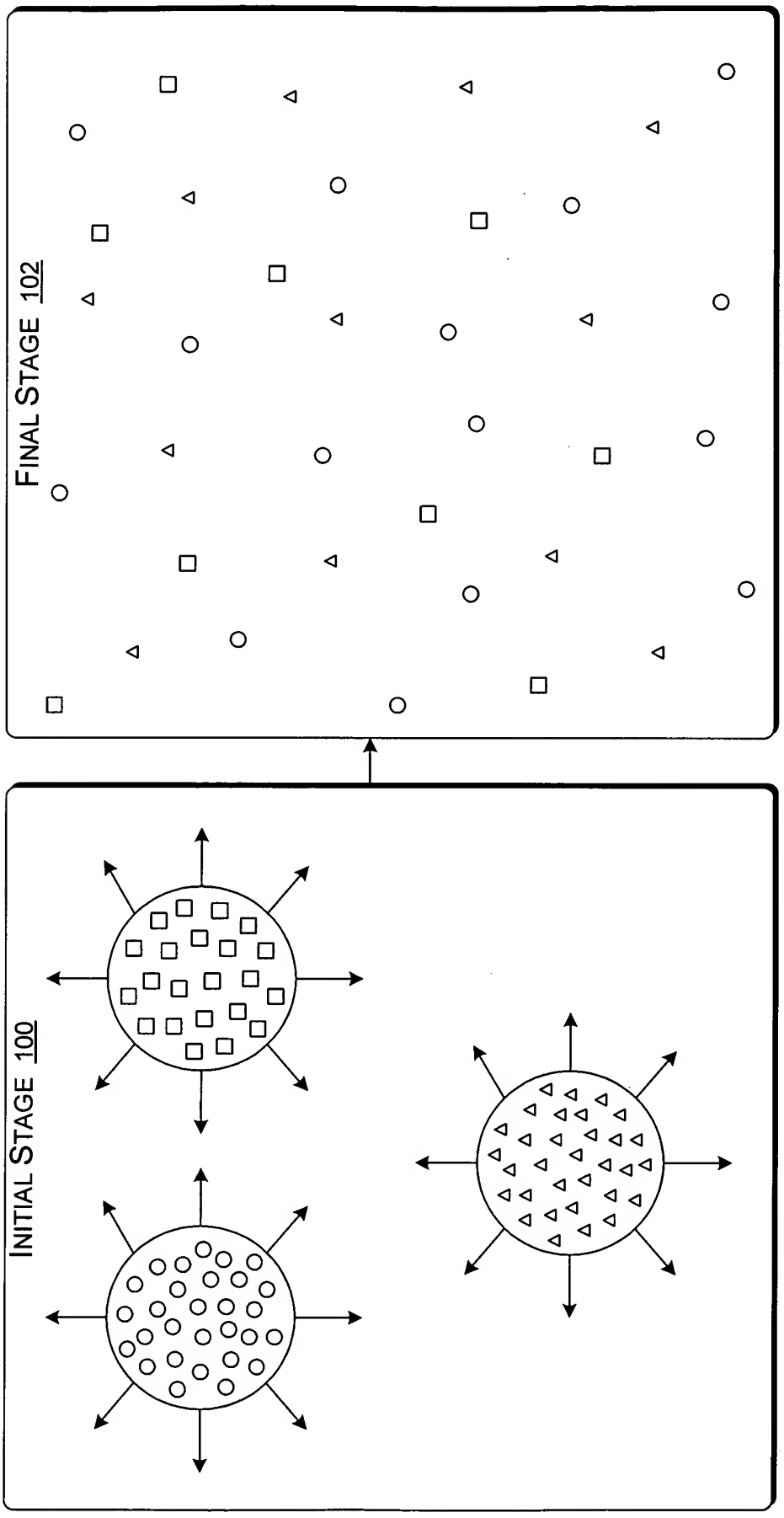


Fig. 1
(prior art)

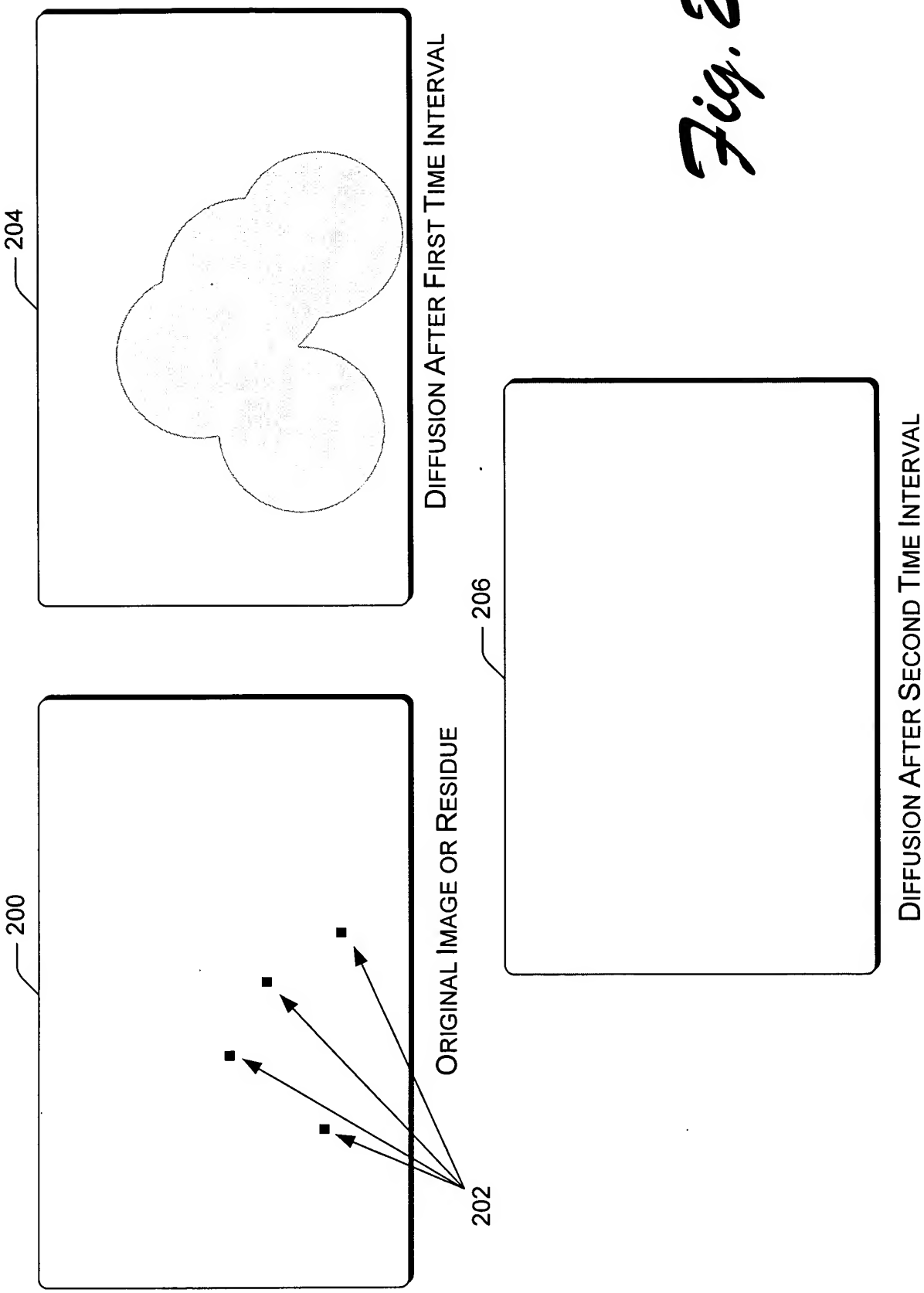

200
202
ORIGINAL IMAGE OR RESIDUE
204
DIFFUSION AFTER FIRST TIME INTERVAL
206
DIFFUSION AFTER SECOND TIME INTERVAL

Fig. 2

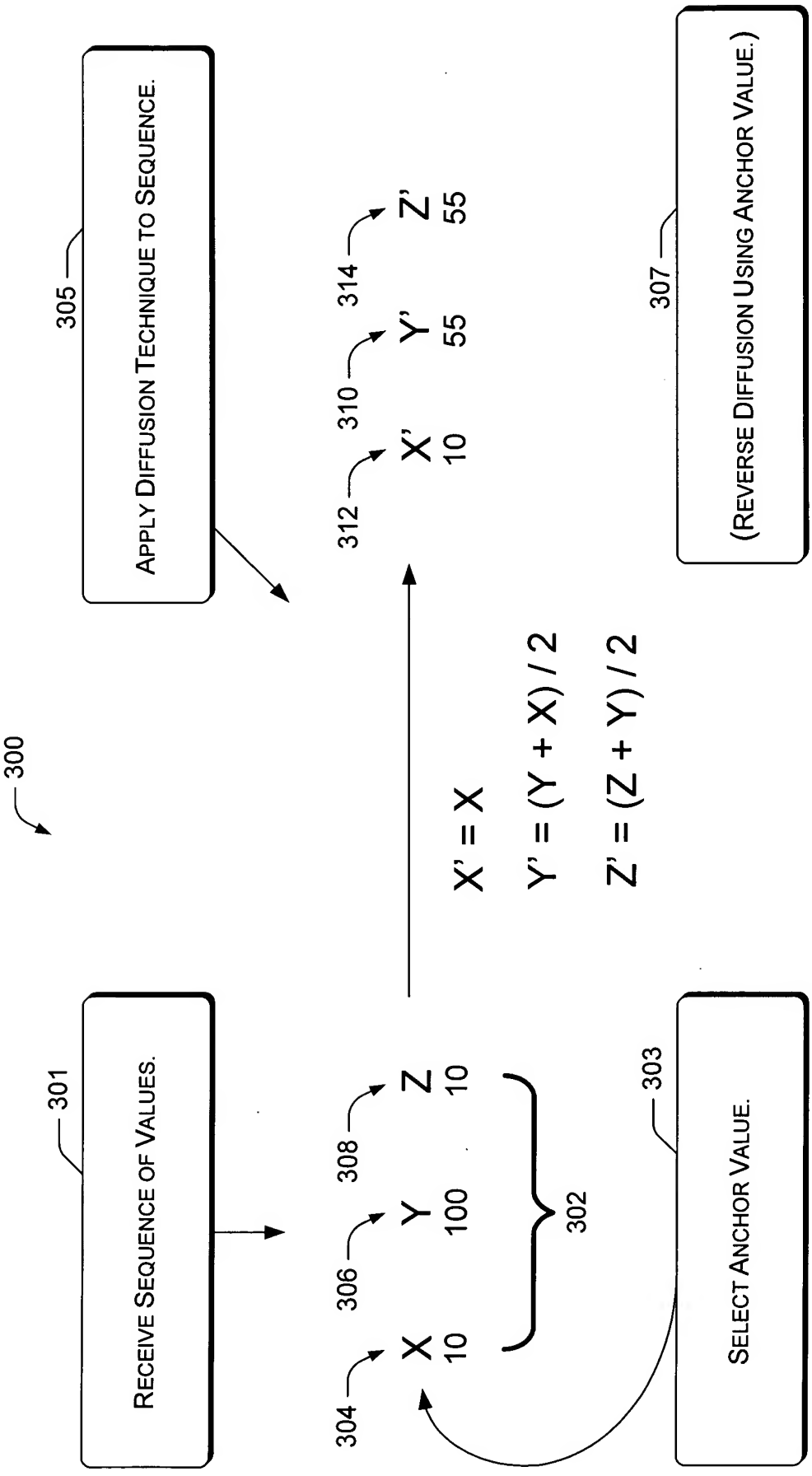

300
301
RECEIVE SEQUENCE OF VALUES.
303
SELECT ANCHOR VALUE.
304
X
10
306
Y
100
308
Z
10
302
305
APPLY DIFFUSION TECHNIQUE TO SEQUENCE.
312
X'
10
310
Y'
55
314
Z'
55
X' = X
Y' = (Y + X) / 2
Z' = (Z + Y) / 2
307
(REVERSE DIFFUSION USING ANCHOR VALUE.)

Fig. 3

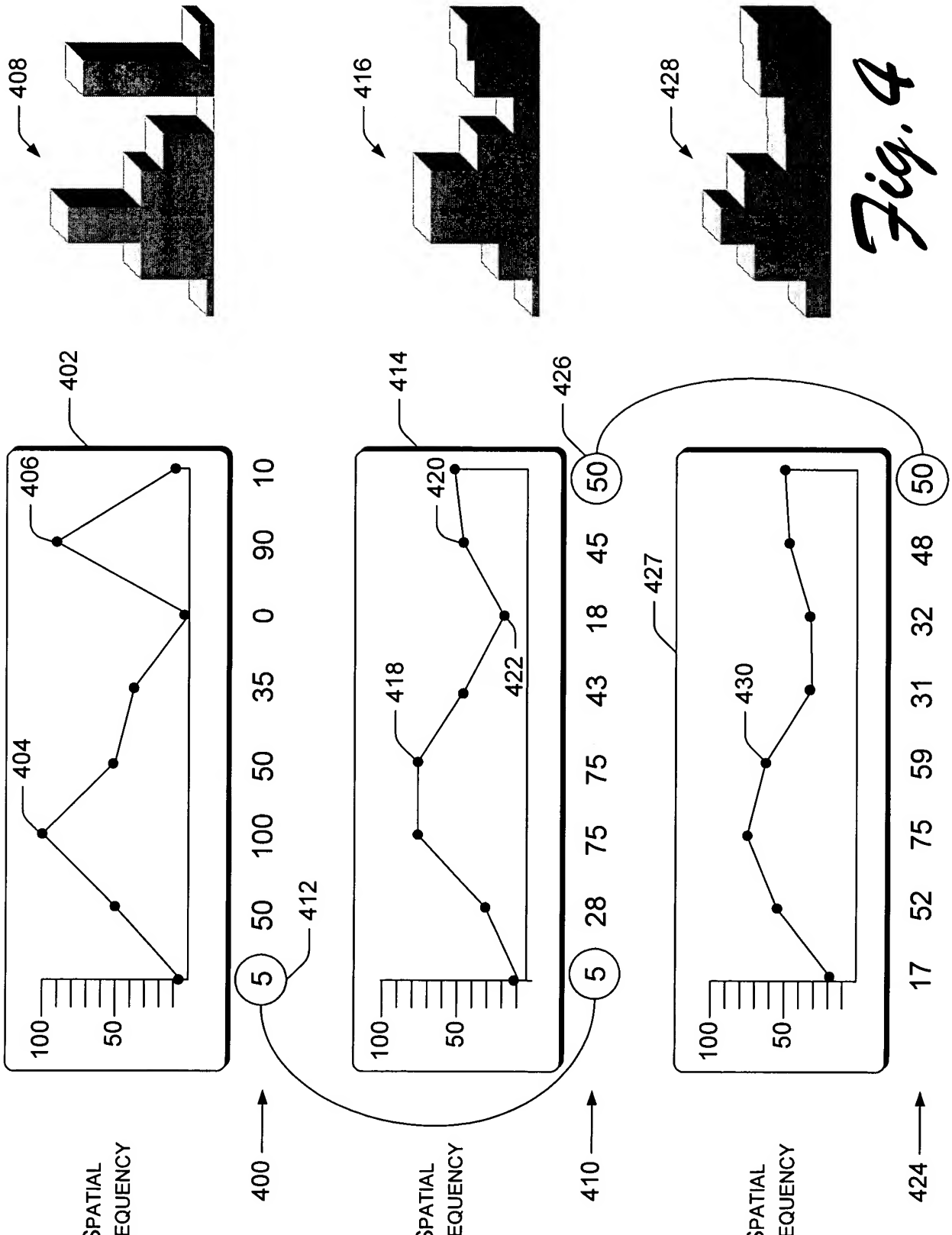

408
416
428
402
414
426
427
404
406
418
420
422
430
412
100
50
5
50
100
50
35
0
90
10
75
43
18
45
28
75
75
59
31
32
48
52
17
SPATIAL FREQUENCY
400
410
424

Fig. 4

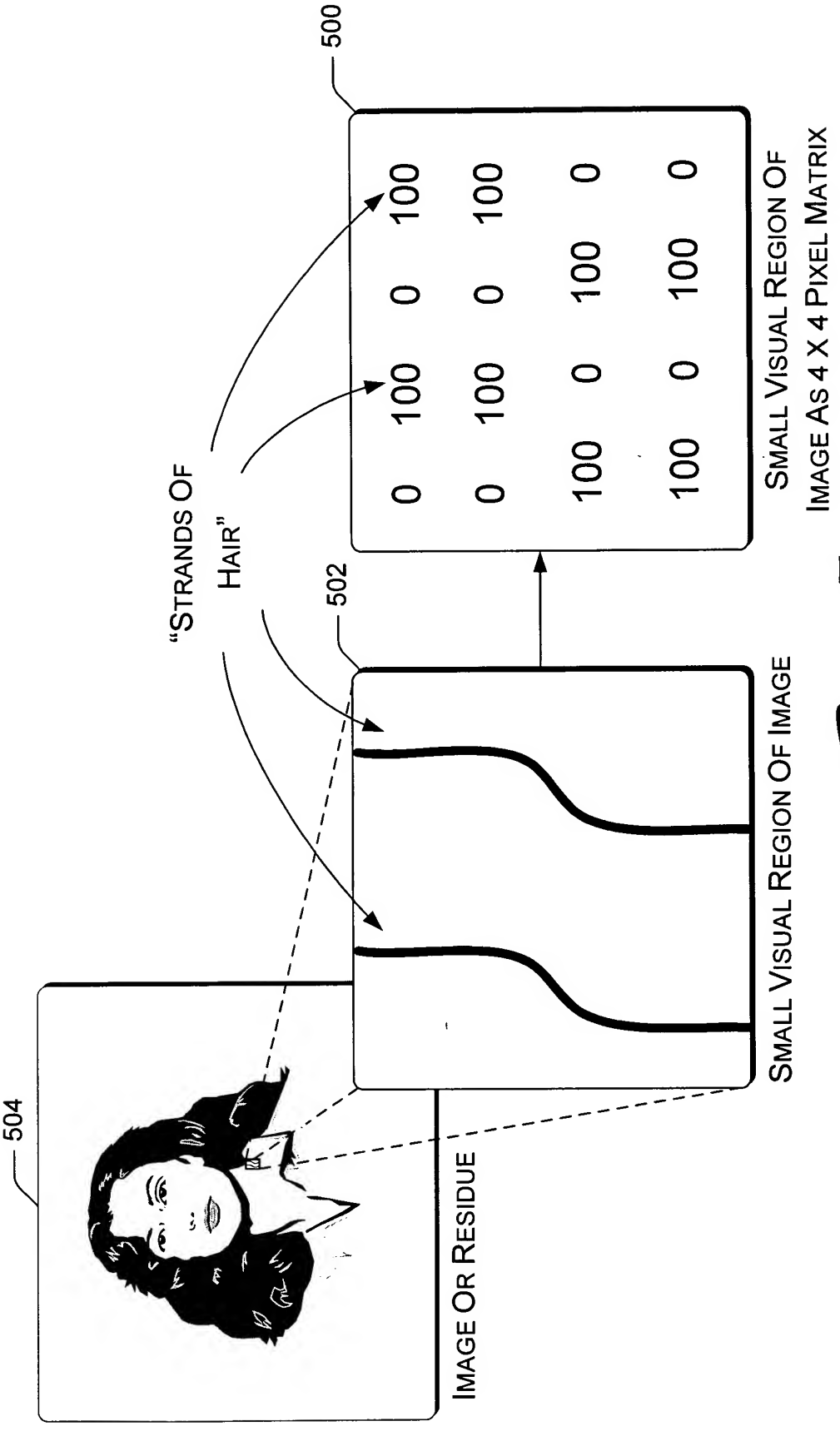

500
0 100 0 100
0 100 0 100
100 0 100 0
100 0 100 0
SMALL VISUAL REGION OF IMAGE AS 4 X 4 PIXEL MATRIX
502
SMALL VISUAL REGION OF IMAGE
"STRANDS OF HAIR"
504
IMAGE OR RESIDUE

Fig. 5

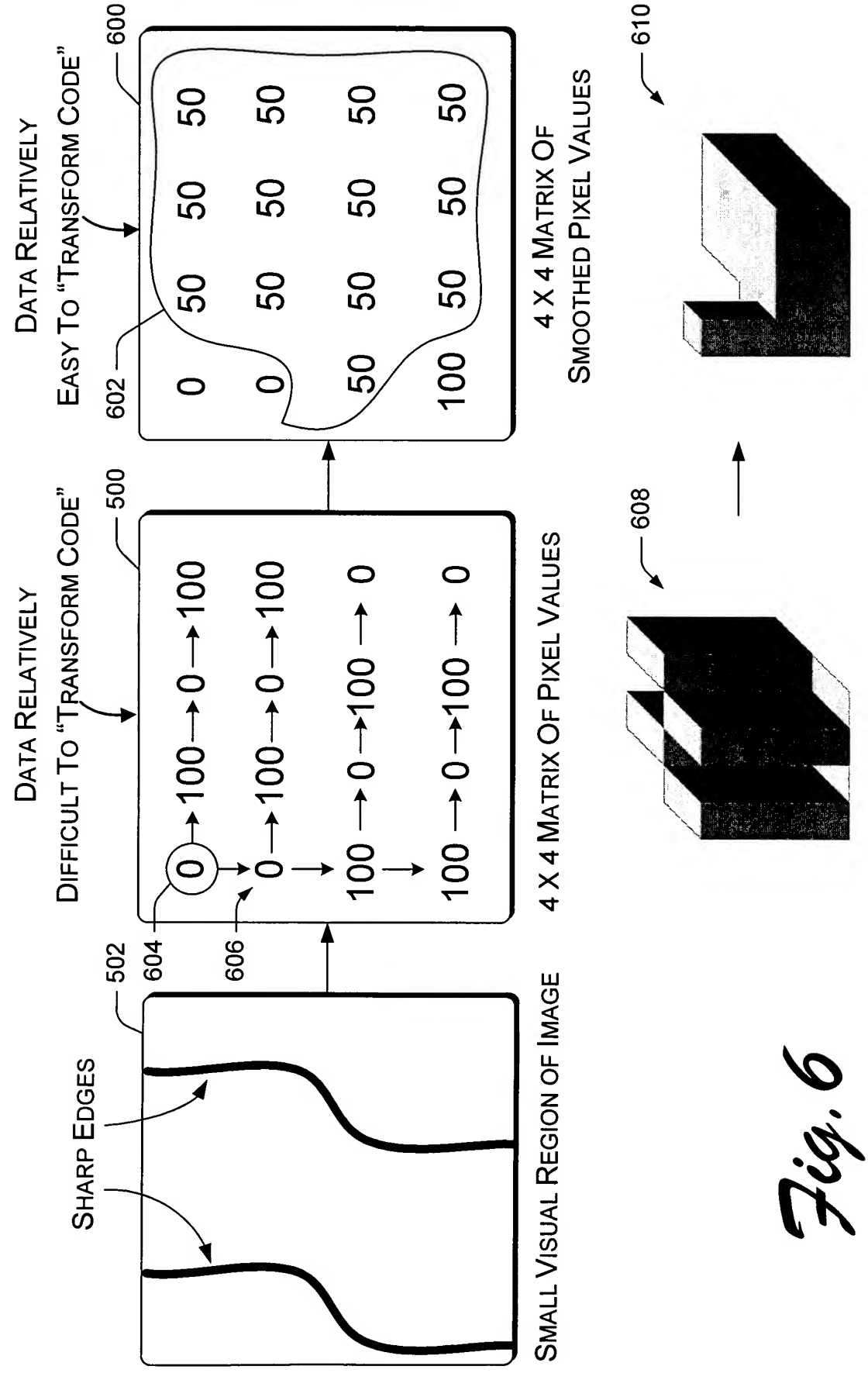

SHARP EDGES
502
SMALL VISUAL REGION OF IMAGE
DATA RELATIVELY
DIFFICULT TO "TRANSFORM CODE"
500
604
606
0 → 100 → 0 → 100
0 → 100 → 0 → 100
100 → 0 → 100 → 0
100 → 0 → 100 → 0
4 X 4 MATRIX OF PIXEL VALUES
608
DATA RELATIVELY
EASY TO "TRANSFORM CODE"
600
602
0 50 50 50
0 50 50 50
50 50 50 50
100 50 50 50
4 X 4 MATRIX OF
SMOOTHED PIXEL VALUES
610

Fig. 6

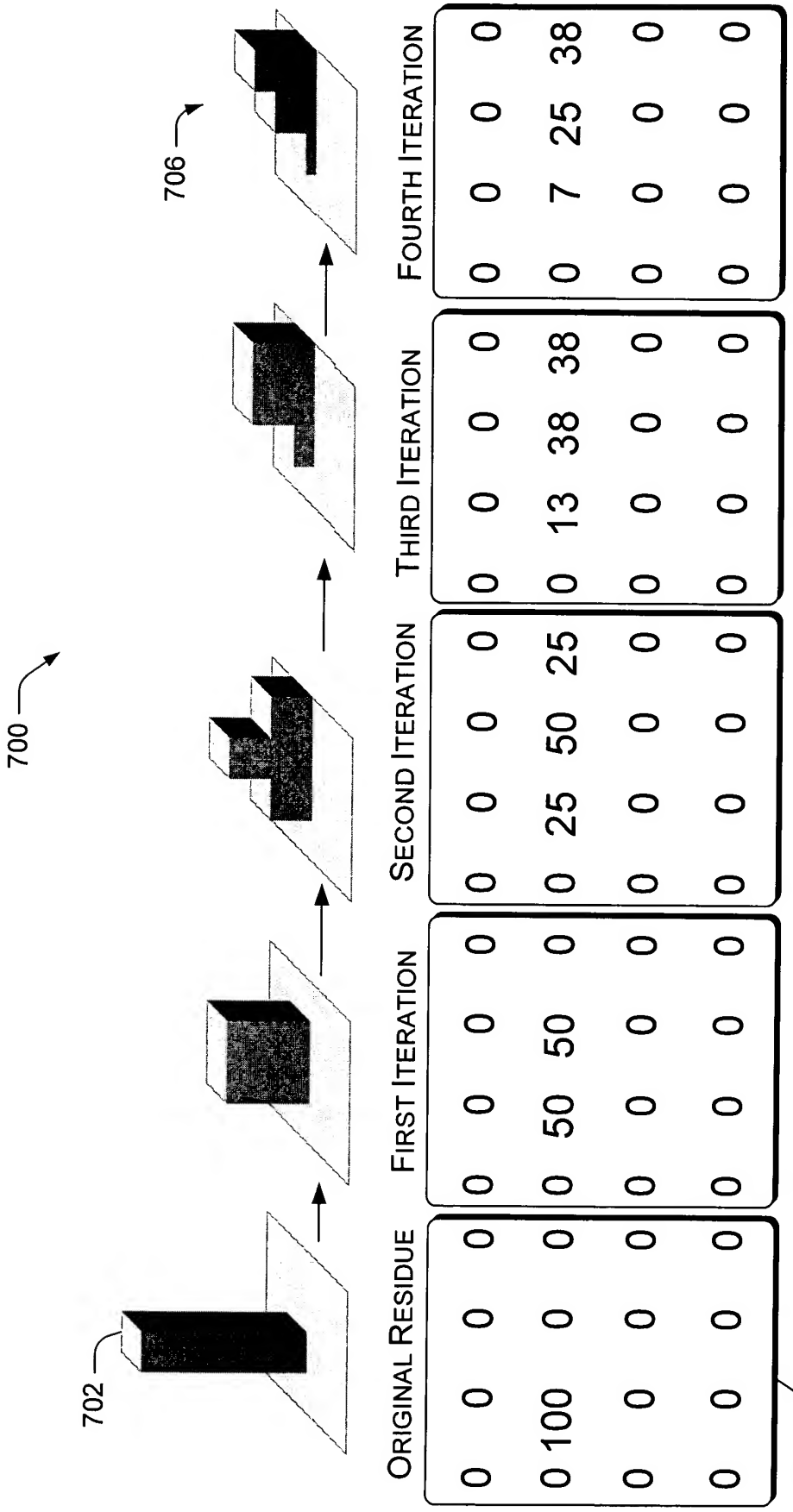

700
702
704
706
ORIGINAL RESIDUE
FIRST ITERATION
SECOND ITERATION
THIRD ITERATION
FOURTH ITERATION

Fig. 7

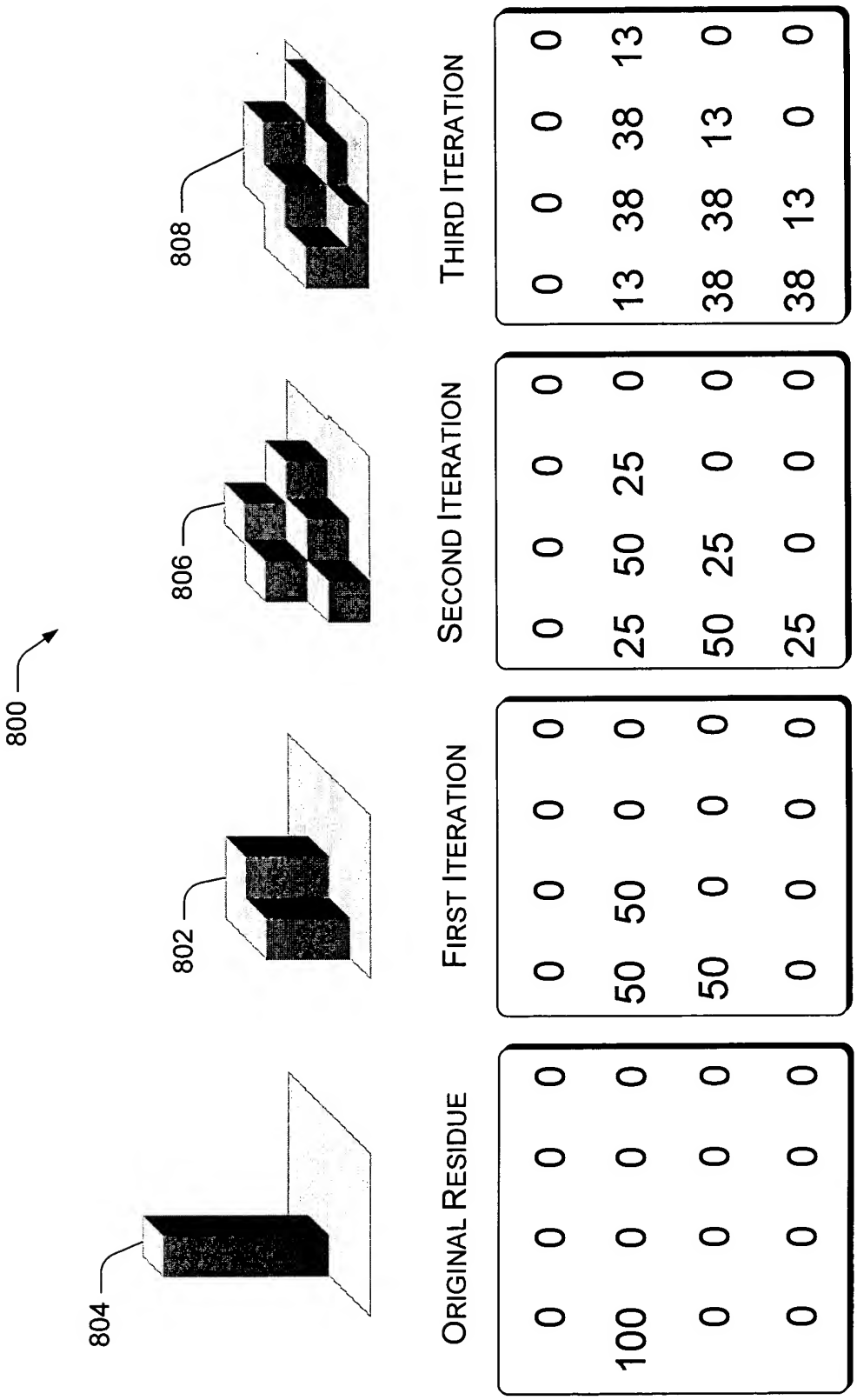

800
804
802
806
808
ORIGINAL RESIDUE
0 0 0 0
100 0 0 0
0 0 0 0
0 0 0 0
FIRST ITERATION
0 0 0 0
50 50 0 0
50 0 0 0
0 0 0 0
SECOND ITERATION
0 0 0 0
25 50 25 0
50 25 0 0
25 0 0 0
THIRD ITERATION
0 0 0 0
13 38 38 13
38 38 13 0
38 13 0 0

Fig. 8

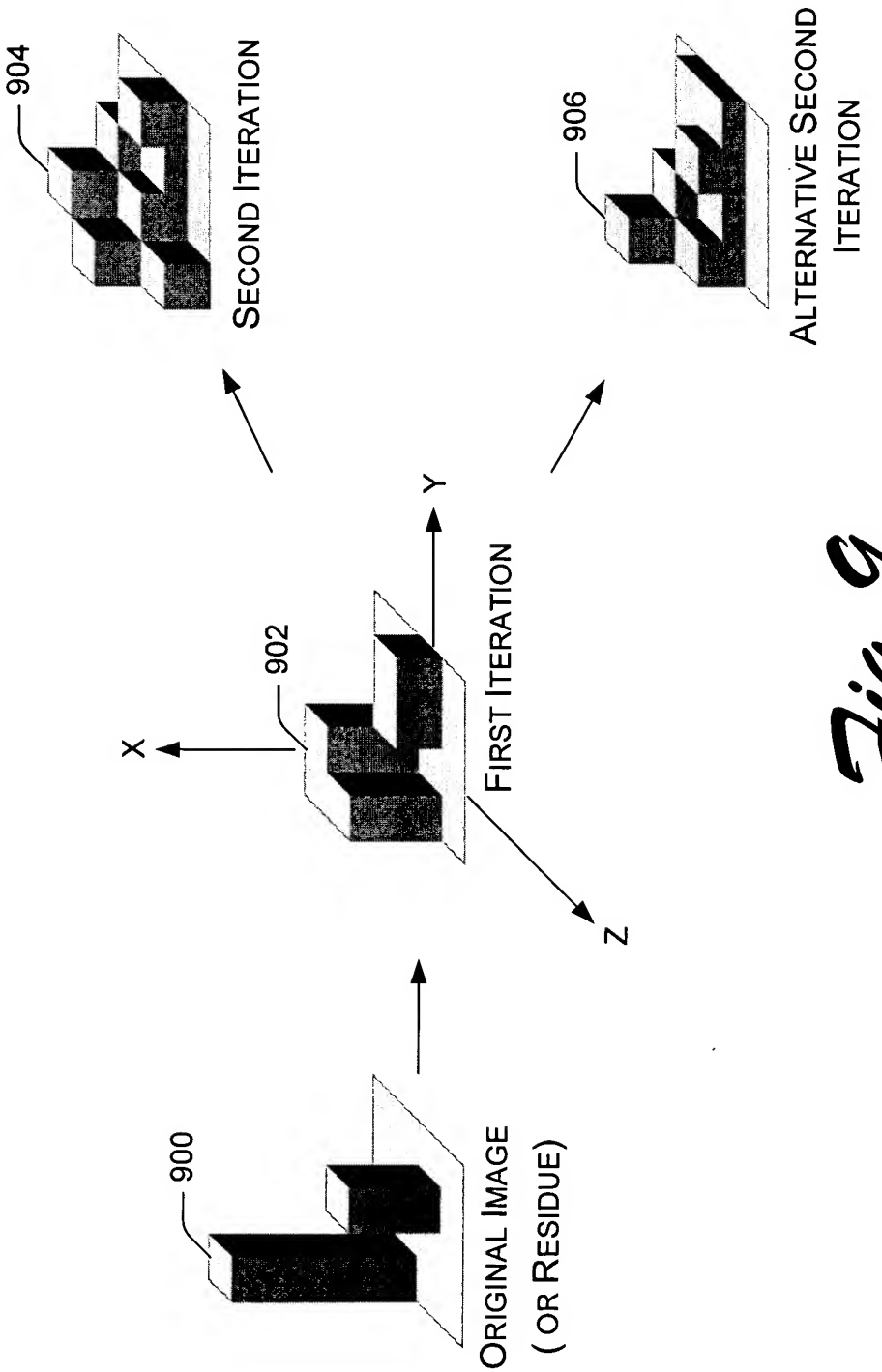

900
ORIGINAL IMAGE
(OR RESIDUE)
902
FIRST ITERATION
X
Y
Z
904
SECOND ITERATION
906
ALTERNATIVE SECOND
ITERATION

Fig. 9

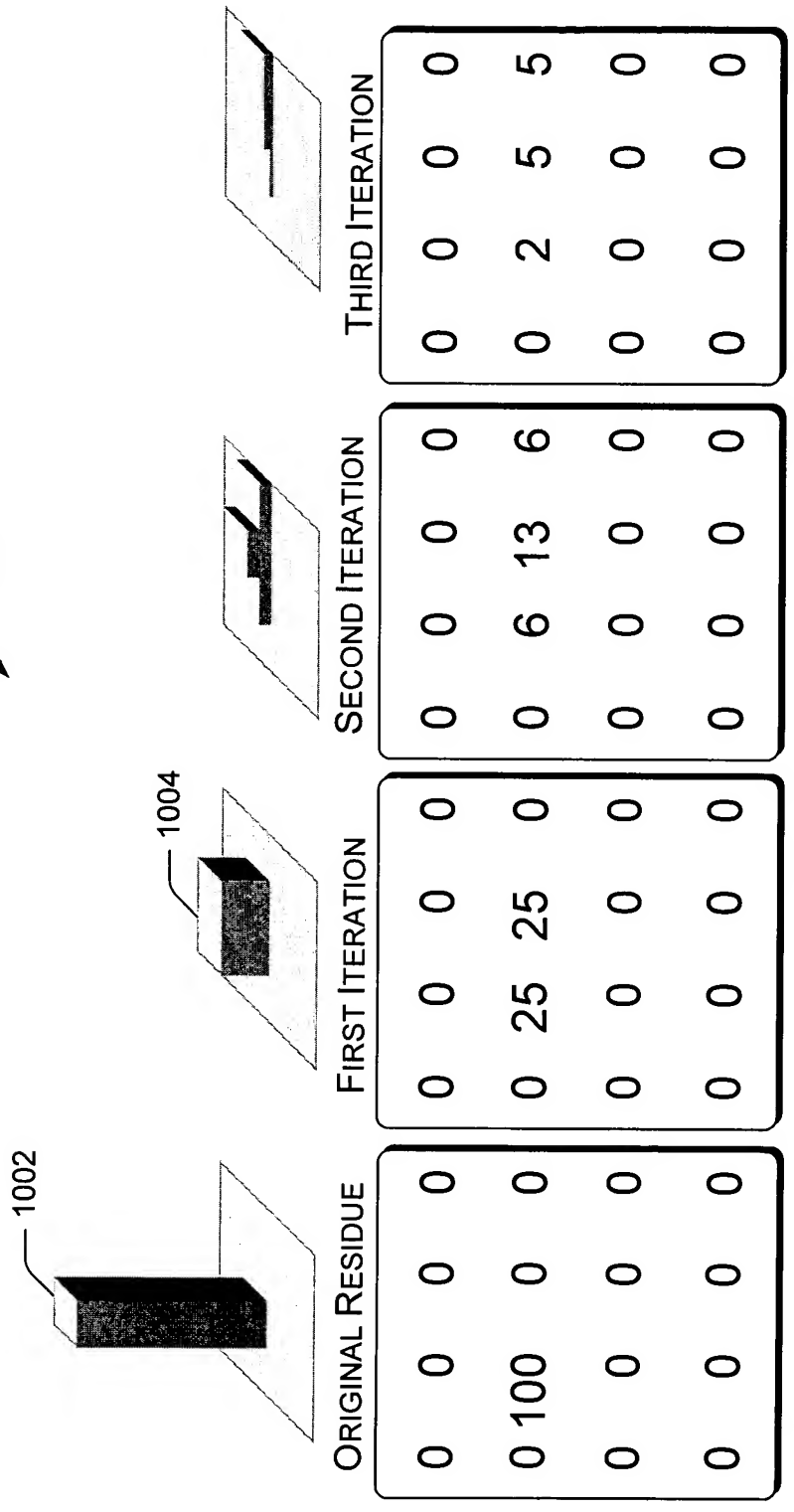

1000
1002
1004
ORIGINAL RESIDUE
0 0 0 0
0 100 0 0
0 0 0 0
0 0 0 0
FIRST ITERATION
0 0 0 0 0
0 25 25 0
0 0 0 0
0 0 0 0
SECOND ITERATION
0 0 0 0 0
0 6 13 6
0 0 0 0
0 0 0 0
THIRD ITERATION
0 0 0 0 0
0 2 5 5
0 0 0 0
0 0 0 0

Fig. 10

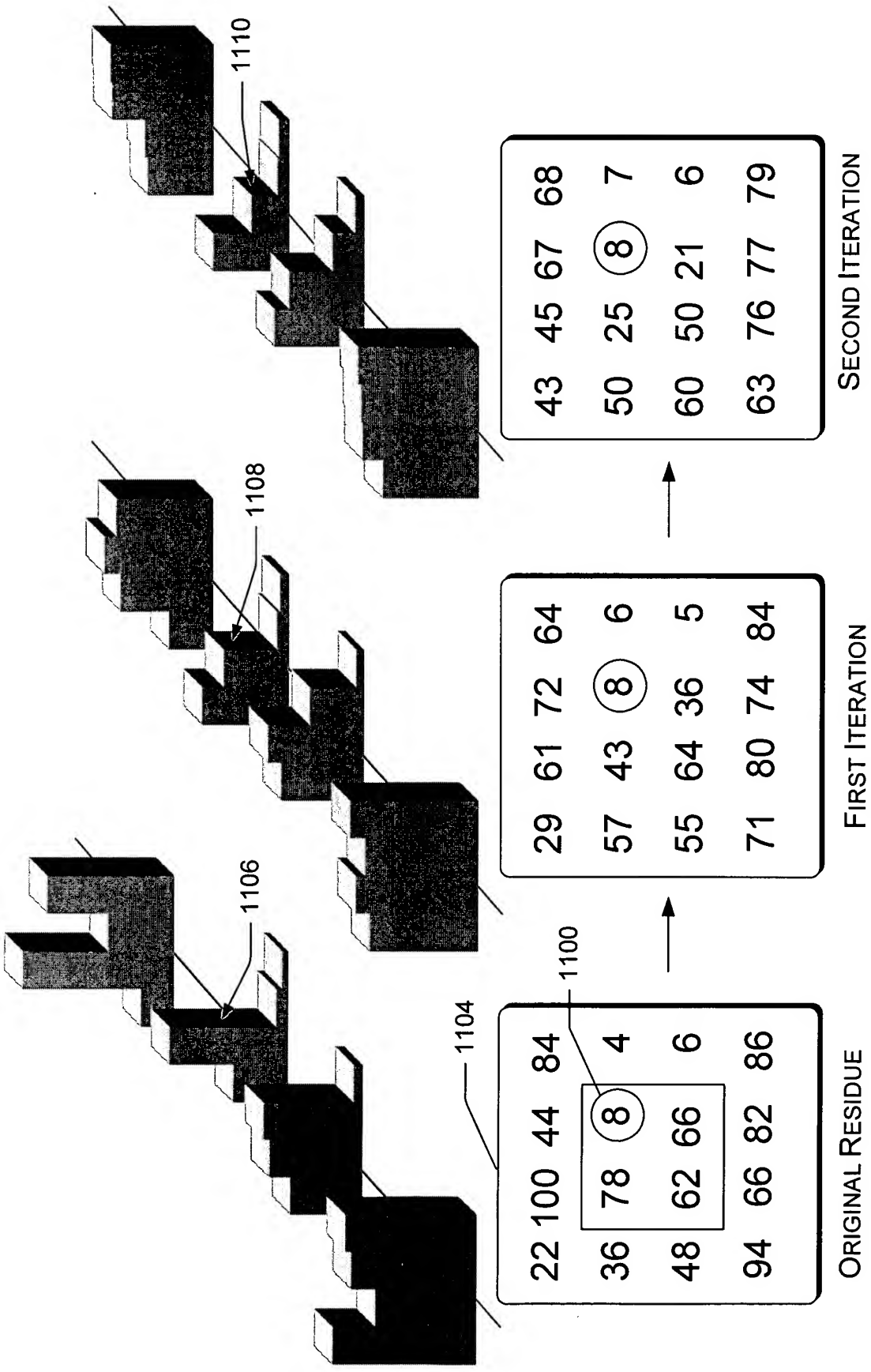

1110
1108
1106
1104
1100
22 100 44 84
36 78 8 4
48 62 66 6
94 66 82 86
ORIGINAL RESIDUE
29 61 72 64
57 43 8 6
55 64 36 5
71 80 74 84
FIRST ITERATION
43 45 67 68
50 25 8 7
60 50 21 6
63 76 77 79
SECOND ITERATION

Fig. 11

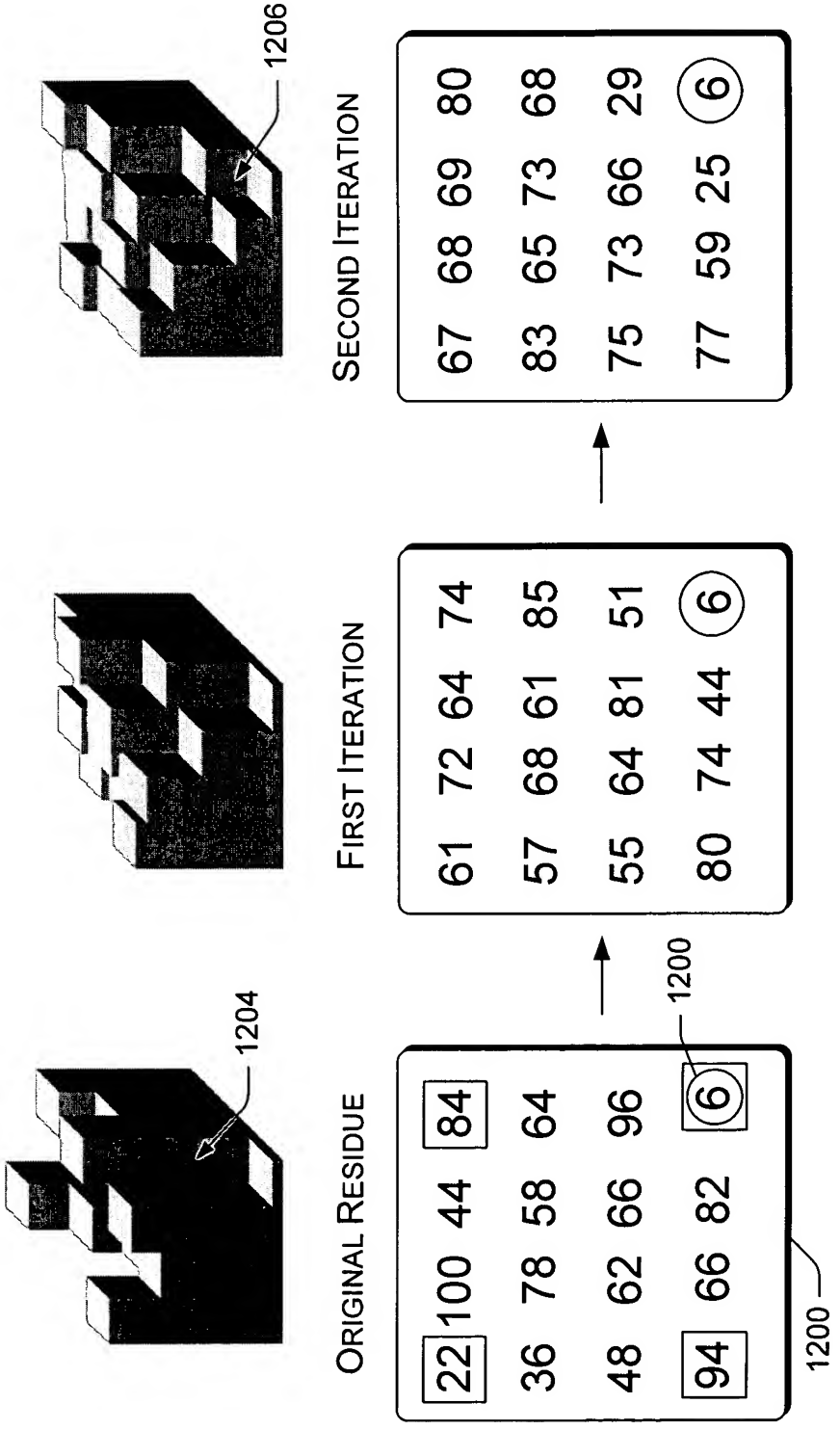

1206
SECOND ITERATION
67 68 69 80
83 65 73 68
75 73 66 29
77 59 25 6
FIRST ITERATION
61 72 64 74
57 68 61 85
55 64 81 51
80 74 44 6
1200
ORIGINAL RESIDUE
22 100 44 84
36 78 58 64
48 62 66 96
94 66 82 6
1200
1204

Fig. 12

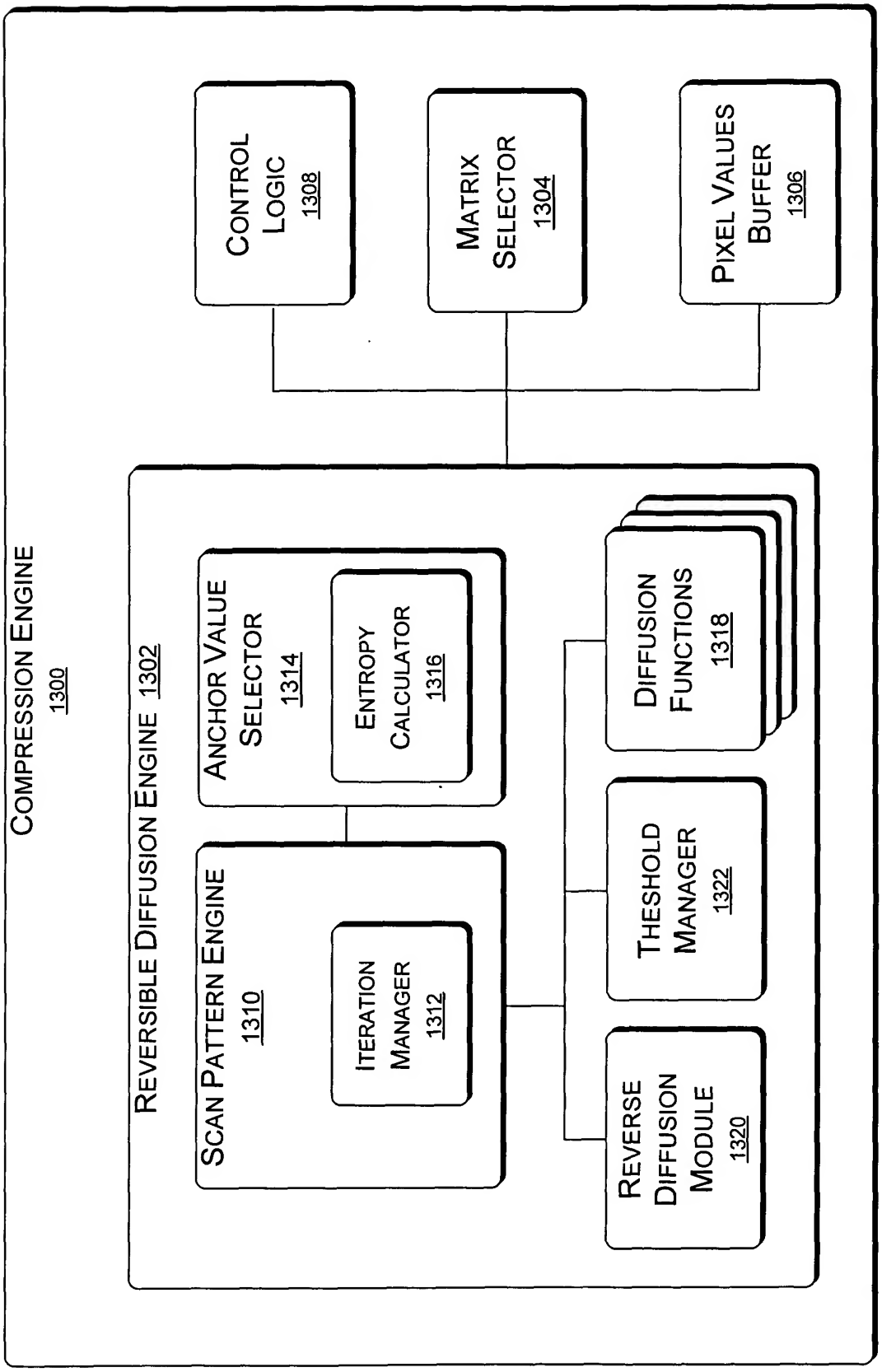
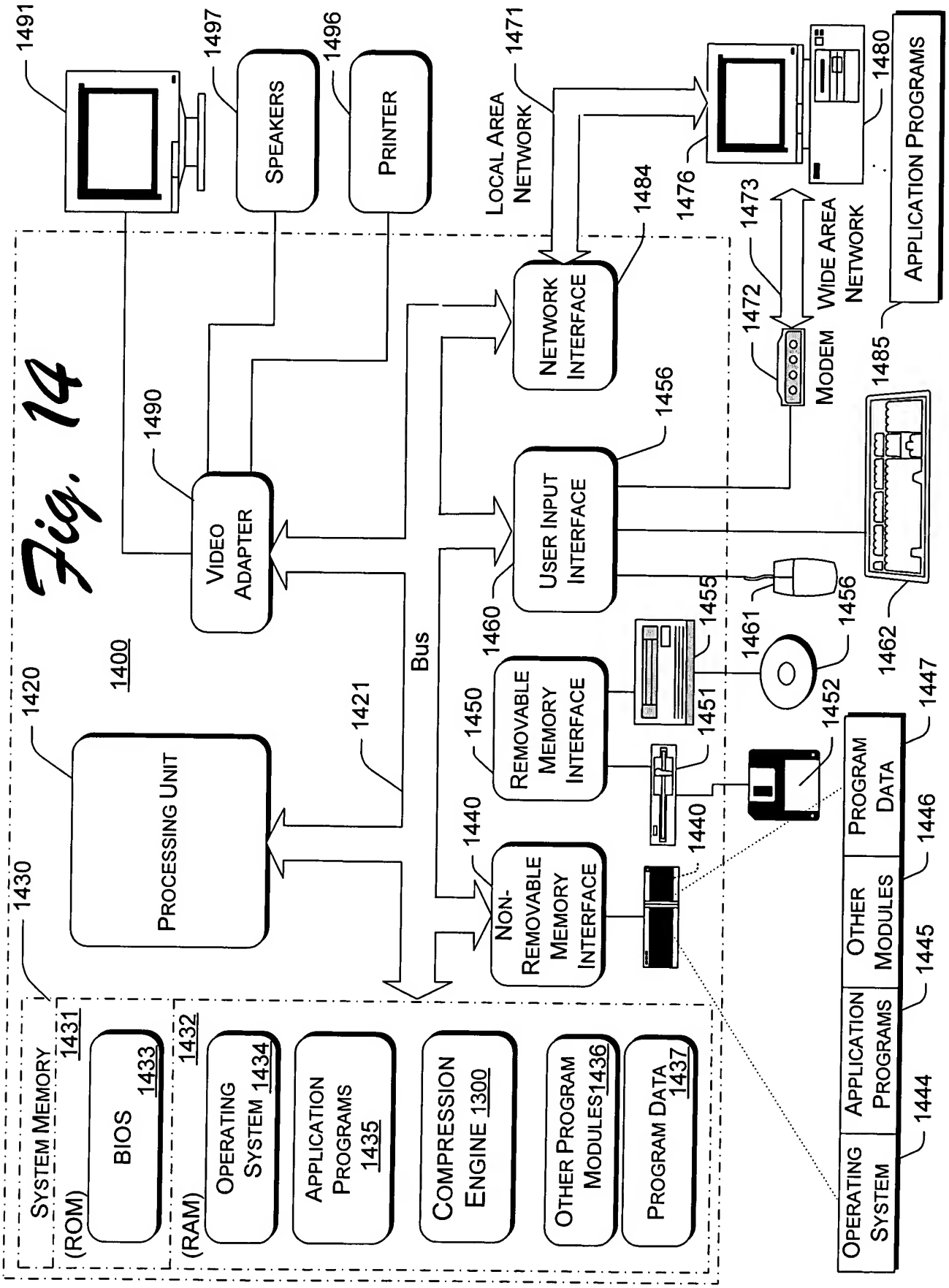

COMPRESSION ENGINE
1300
CONTROL LOGIC
1308
MATRIX SELECTOR
1304
PIXEL VALUES BUFFER
1306
REVERSIBLE DIFFUSION ENGINE 1302
SCAN PATTERN ENGINE
1310
ITERATION MANAGER
1312
ANCHOR VALUE SELECTOR
1314
ENTROPY CALCULATOR
1316
DIFFUSION FUNCTIONS
1318
THESHOLD MANAGER
1322
REVERSE DIFFUSION MODULE
1320

Fig. 13


1491
1497
SPEAKERS
1496
PRINTER
LOCAL AREA NETWORK
1471
1480
APPLICATION PROGRAMS
1484
1476
1473
WIDE AREA NETWORK
1472
MODEM
1485
NETWORK INTERFACE
1456
1490
VIDEO ADAPTER
USER INPUT INTERFACE
1460
1455
1461
1456
1462
1400
1420
1421
Bus
REMOVABLE MEMORY INTERFACE
1450
1451
1452
1447
PROCESSING UNIT
1440
NON-REMOVABLE MEMORY INTERFACE
1440
1430
PROGRAM DATA
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APPLICATION PROGRAMS
OPERATING SYSTEM
1446
1445
1444
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(ROM)
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1432
(RAM)
OPERATING SYSTEM 1434
APPLICATION PROGRAMS 1435
COMPRESSION ENGINE 1300
OTHER PROGRAM MODULES1436
PROGRAM DATA 1437

Fig. 14